

NOTE ON DR. J. E. GRAY'S TYPE-SPECIMENS OF JURASSIC
AMMONITES FROM INDIA.

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IN the first volume of his work entitled "Illustrations of Indian Zoology; chiefly selected from the collection of Major-General Hardwicke," published in 1830-32, J. E. Gray gave, on plate c, four figures of three species of Ammonites which he named *A. Nepaulensis* (figs. 1 and 2), *A. Wallichii* (fig. 3), and *A. tenuistriata* (fig. 4). According to the legend on the plate, which is dated 1829, they all came from "Sulgrances, Nepaul." The species were not described.

Of these specimens three, viz., the originals of figs. 1, 3, and 4, are in the British Museum collection, and bear respectively the register numbers C. 5,052, C. 5,041, and C. 5,051; the other specimen, the original of fig. 2, we have not been able to identify.

Although the conclusions respecting *A. Wallichii* and *A. tenuistriata* recorded below have already been briefly stated elsewhere,¹ the published figures of these specimens differ so much that a fuller explanation seems to be necessary.

1. AMMONITES NEPAULENSIS, Gray.

Although some of the matrix has been removed since Gray's figure was drawn, there is abundant evidence that the specimen in the British Museum collection bearing the register number C. 5,052 is the original of Gray's fig. 1.² The drawing is of the natural size, but is reversed; it shows that the fossil is partially enclosed in a nodule, a portion of only one side of the outer whorl being exposed. Since Gray's figure was drawn, an attempt has been made to clear the matrix from the rest of the outer whorl; the commencement of the outer whorl has been successfully cleared, but the greater part of the whorl that was covered by matrix has been injured during the operation. There is, however, no difficulty whatever in recognizing the fossil as the original of Gray's fig. 1.

¹ G. C. Crick: List of Types and Figured Specimens of Fossil Cephalopoda in the British Museum (Natural History), 1898, pp. 26 and 29.

² *Ibid.*, p. 22.

This fossil was transferred to the British Museum from the Museum of Practical Geology in 1880, with a label belonging to that Museum bearing the inscription "Oolitic: Niti Pass. *Ammonites Nepalensis*. Coll. by Col. Strachey." This last statement is erroneous; the fossil could not have been collected by Colonel Strachey, because the specimen is figured in Gray's work, which is dated 1830-32, whereas Colonel Strachey's specimens were not obtained until the years 1848 and 1849.¹

The Palæozoic and Secondary fossils collected by Strachey were described, the former by J. W. Salter and the latter by H. F. Blanford, in 1865, in a work the title-page of which reads as follows:—"Palæontology of Niti in the Northern Himalaya: being descriptions and figures of the Palæozoic and Secondary Fossils collected by Colonel Richard Strachey, R.E. Descriptions by J. W. Salter, F.G.S., A.L.S., and H. F. Blanford, A.R.S.M., F.G.S. Reprinted with slight corrections for private circulation from Colonel R. Strachey's forthcoming work² on the Physical Geography of the Northern Himalaya. Calcutta: O. T. Cutter, Military Orphan Press. March, 1865." All the plates are marked vol. ii, and are numbered from 1 to 23.

In the copies of this work that are in the libraries of the Geological Department of the British Museum, of the Geological Society of London, and of the Museum of Practical Geology respectively, the first nine plates are photographs of engraved plates, whilst the rest (10-23) were lithographed and printed in Calcutta. It would thus seem that this was the manner in which the plates were issued with the work. But the library of the Geological Department of the British Museum also contains a set of plates, presented by Sir Richard Strachey in 1892. The first nine are engraved, and it is evident that it was from precisely similar imprints that the photographs issued with the work were taken; plates x-xiii, xvi-xviii, and xxi-xxiii were drawn and lithographed by W. H. Baily, the others, xix and xx, by C. R. Bone; and they were all printed by Ford & West, evidently in England. The two sets of plates present, in the drawing of the specimens, sufficient differences to show that the 'English' set was not copied from the 'Indian,' but that most of the figures, at any rate, were re-drawn from the actual specimens, additional details being given in several instances.³ General Sir Richard Strachey informs me that the 'English' set of plates has never been "formally published," so far as he knows—"certainly not in England."

In that work Blanford figured an example of *Ammonites Nepalensis* (pl. xiv, figs. 1a, b), and at first sight one is scarcely prepared to regard this specimen as one of the examples figured by Gray, but a close examination leads us to believe that it is the example represented in Gray's fig. 1.

In Blanford's figures, which are reversed, the piece of matrix still remaining at the aperture of the shell is not shown, and the injured

¹ Quart. Journ. Geol. Soc., vol. vii (1851), p. 294.

² This work was never published.

³ Compare, for example, in the two sets, pl. xi, figs. 1c, 2c; pl. xiii, fig. 1a; pl. xv, fig. 1a; pl. xvi, figs. 1a, 2a; pl. xvii, figs. 2a, b; pl. xxi, fig. 1b.

portion of the whorl, which is the portion on the right in fig. 1*a*, has been restored. That the whorl has been restored can be readily seen; the sculpture on the last half of the outer whorl has evidently been copied, though not very correctly, from the actual specimen, and also the few fine ribs at the commencement of the outer whorl; but the ribbing of the intervening portion is obviously so inconsistent with the rest that it cannot possibly have been copied from an actual example; this, in fact, is the restored portion. Further, the appearance of the last three ribs at the anterior part of the specimen corresponds exactly to the exerted portion of these ribs in Gray's type-specimen. The width of the umbilicus is more nearly correctly represented in Gray's figure; this is relatively far too wide in Blanford's figure. The ribbing also is much too irregularly represented in Blanford's figure.

Blanford's fig. 1*b*, if taken from this specimen, is perfectly imaginary so far as the right-hand portion of the figure is concerned, for this side of the fossil is completely obscured by matrix. Blanford admits that the figures are incorrect, for he says "the overlap of the whorl is considerably greater than is represented in the figures, Plate xiv, and the aperture or section of the whorl, longer and more compressed-ovate than in fig. 1*b*." We think, however, it is clear that the original of Gray's fig. 1 is the original also of Blanford's pl. xiv, figs. 1*a*, *b*. This is the fossil in the British Museum collection bearing the register number C. 5,052. The dimensions of the exerted portion of the fossil, as nearly as can be measured, are: diameter of shell, 101 mm.; height of outer whorl, 46.5 mm.; thickness of outer whorl, estimated at about 37 mm.; width of umbilicus, 23 mm.

2. AMMONITES WALLICHII, Gray.

Gray's type-specimen is in the Brit. Mus. collection (No. C. 5,041).¹ There can be no doubt about the identification of the specimen, because Gray's figure, drawn of the natural size though reversed, represents the injured portion of the outer whorl, and also indicates the small shell imbedded in the matrix at the anterior end of the fossil; the diameter is fairly accurately represented, but the width of the umbilicus is a little too narrow. The dimensions of the specimen are as follows: diameter of shell, 94 mm.; height of outer whorl, 33.5 mm.; thickness of outer whorl, 31.5 mm.; width of umbilicus, 37 mm.

H. F. Blanford, in J. W. Salter & H. F. Blanford's "Palaeontology of Niti in the Northern Himalaya," 1865, figured this species (pl. xv, figs. 1*a* and *b*), and a comparison of his figures with Gray's type—the form of the anterior end and the presence there of a small shell imbedded in the matrix—shows conclusively that they must have been drawn from that fossil. The eroded portion of the whorl has, however, been restored, both in figs. 1*a* and *b*. The dimensions of

¹ G. C. Crick: List of Types and Figured Specimens of Fossil Cephalopoda in the British Museum (Natural History), 1898, p. 29.

the specimen are not accurately drawn. On the same plate there is a drawing of a suture-line, which is referred to fig. 2.

In the text of his work (p. 84) Blanford refers to *Ammonites Wallichii* the following figures: pl. xv, figs. 1a-c; pl. xix, figs. 1a-c, 2a-c. Now figs. 1a and b in pl. xv represent Gray's type-specimen, but there is no figure lettered 1c in any copy of this plate that we have seen. There is a suture-line on this plate numbered in the 'Indian' set 2b and in the 'English' set 2d, fig. 2 being named in each case *A. tenuistriatus*, but that it does not belong to that species is evident from Blanford's remark in his description of the species that "the sutures are not visible." Now the suture-line of Gray's type-specimen has been painted in as if for the purpose of being drawn, and one must admit that at least portions of it closely resemble fig. 2b (or 2d), but the lateral lobe is represented very much too deep. It seems, however, that the suture-line is intended for that of Gray's type, and should therefore have been lettered 1c. This drawing, like figs. 1a and b, is also reversed.

3. AMMONITES TENUISTRATA, Gray.

The original of Gray's figure of this species is in the British Museum collection (No. C. 5,051).¹ Gray's figure is of the natural size, but is reversed. Some of the matrix has been removed since the specimen was figured by Gray, but there are still indications on the fossil of the original extent of the matrix. There can be no doubt whatever about its being the figured specimen. It is accompanied by a label belonging to the Museum of Practical Geology, bearing the following inscription: "Oolitic: Niti Pass. *Ammonites tenuistriatus*. Coll. by Col. Strachey (belongs to Brit. Mus.)." The statement that it belonged to the Strachey Collection is obviously erroneous, for, as we have already stated, Gray's figures were published many years before Colonel Strachey's fossils were collected. Moreover, according to Gray, the type came from "Sulgrances, Nepaul."

The National Collection also contains the specimen (No. C. 5,039) figured by H. F. Blanford in Salter & Blanford's "Palæontology of Niti," pl. xiv, fig. 2, and the natural mould (No. C. 5,036) from which was made the gutta-percha cast figured in pl. xv, fig. 2a of the same work: both specimens belonged to the Strachey Collection, and were transferred from the Museum of Practical Geology in 1880. As the former specimen is only doubtfully referred to this species, it seems evident that the two examples of this species examined and mentioned by Blanford (op. cit., p. 78) were those represented in pl. xv, fig. 2a, and pl. xv, figs. 2b, 2c. Blanford states that one of the specimens which he examined was "Hardwicke's [i.e. Gray's] type," and since fig. 2a cannot possibly be that type, we are forced to conclude that figs. 2b, 2c of pl. xv were drawn from the type-specimen; and a comparison of the figures with the specimen supports that conclusion, Blanford's

¹ G. C. Crick: List of Types and Figured Specimens of Fossil Cephalopoda in the British Museum (Natural History), 1898, p. 26.

figures having been drawn from a portion of the specimen after some of the matrix had been removed. This view is further supported by the copy of fig. 2*b* in the 'English' set of the plates already alluded to, the line indicating the original extent of the matrix as seen in Gray's figure being clearly indicated, as well as the small irregularly-shaped patch from which the test has been chipped off. The suture-line on the same plate numbered in the 'Indian' set of plates 2*b*, and in the 'English' set 2*d*, does not, as we have already stated, belong to *A. tenuistriatus*,¹ but to *Wallichii*, and should have been numbered 1*c*. As we have already pointed out elsewhere,² Blanford misquotes Gray's species as "*Amm. tenuisulcatus*"; but he corrects the mistake in the list of 'Errata' given on p. 112.

Although the dimensions of the specimen cannot be given with absolute certainty, the fossil has been cleared enough to enable these measurements to be indicated approximately. They are as follows: diameter of the shell, 84 mm.; height of outer whorl, about 32.5 mm.; thickness of outer whorl, probably about 27 mm.; width of umbilicus, about 31 mm. One of the inner whorls is also revealed; it has a diameter of 14 mm.; the height of the whorl at this diameter being 4.1 mm., and the width on the umbilicus 5.2 mm.

The conclusions arrived at in the preceding note may be expressed as follows:—

Ammonites Nepalensis, J. E. Gray: Illustrations of Indian Zoology, vol. i (1830–32), pl. c, fig. 1 (reversed). *Ammonites Nepalensis*, J. E. Gray: H. F. Blanford, in J. W. Salter & H. F. Blanford, Palæont. Niti, 1865, p. 77, pl. xiv, figs. 1*a*, *b* [much restored]. Sulgrancees, Nepal [*vide* Gray]. Specimen in British Museum (Nat. Hist.), register No. C. 5,052.

Ammonites Wallichii, J. E. Gray: Illustrations of Indian Zoology, vol. i (1830–32), pl. c, fig. 3 (reversed). *Ammonites Wallichii*, J. E. Gray: H. F. Blanford, in J. W. Salter & H. F. Blanford, Palæont. Niti, 1865, p. 84, pl. xv, figs. 1*a*, *b*, and the suture-line 2*d* (reversed). In some impressions of this plate the suture-line is lettered 2*b*; in all cases it is wrongly named *A. tenuistriatus*. Sulgrancees, Nepal [*vide* Gray]. Specimen in British Museum (Nat. Hist.), register No. C. 5,041.

Ammonites tenuistriata, J. E. Gray: Illustrations of Indian Zoology, vol. i (1830–32), pl. c, fig. 4 (reversed). *Ammonites tenuistriatus*, J. E. Gray: H. F. Blanford, in J. W. Salter & H. F. Blanford, Palæont. Niti, 1865, p. 78, pl. xv, figs. 2*b*, *c* (not 2*d*). Only a portion of the specimen is figured. Sulgrancees, Nepal [*vide* Gray]. Specimen in British Museum (Nat. Hist.), register No. C. 5,051.

¹ The fact that the suture-line did not belong to *A. tenuistriatus* was surmised by F. Stoliczka, Mem. Geol. Surv. India, vol. v (1866), p. 101, footnote.

² G. C. Crick: List of Types and Figured Specimens of Fossil Cephalopoda in the British Museum (Natural History), 1898, p. 26.